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MEIKO

Operating instructions

Dishwashing machine

EcoStar 545 D-M

TRANSLATION OF THE "ORIGINAL OPERATING INSTRUCTIONS"

We reserve the right to change execution and construction!
MEIKO Maschinenbau GmbH & Co. KG, Postfach 2040, D-77652 Offenburg, Tel.: +49/781/203-0, Fax: +49/781/203-1121

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1 Introduction and general information

Dear Customer,
We are delighted about the confidence you have shown in our products.
It is very important to us that you should obtain significant use from MEIKO products and that they should make your work easier.

If you follow the instructions in this document carefully, your dishwashing machine will always give you total satisfaction and will have a long service life.

The cleaning and disinfection machine has been assembled by us at the factory and has undergone a thorough inspection. This provides us with the certainty and you with the guarantee that you will receive a fully developed product.

We would therefore ask you to read these operating instructions carefully before using the installation.

These operating instructions inform users of this installation about
- the installation
- its operating methods
- Its use
- the safety instructions and
- the maintenance

.

This information will help you to get to know the installation fully and to use it properly. It will also enable you to avoid repairs and the related loss of operational time.
In the event of any damage caused by non-observance of these operating instructions, any guarantee claims are invalid. We accept no liability for any consequential loss or damage arising as a result.

MEIKO is constantly working on the further development of all its models.

We would therefore ask you to understand that because of this, we must reserve the right to make modifications at any time to any items covered by the contract in terms of their shape, fittings and technical characteristics.

No claims may therefore be based on the details, the images or the descriptions contained in these operating instructions.

Should you require any further information, or in case any particular problems not dealt with in great detail in the operating instructions should arise, you may contact the relevant MEIKO branch to obtain the information you require.

We should also like to inform you that the contents of these instructions do not form part of or amend any earlier or existing agreement, statement, or legal position.

All MEIKO's obligations arise from the relevant purchase contract which also contains the entire and only valid guarantee provisions.

These contractual guarantee rules shall be neither extended nor restricted as a result of any explanations given in the instructions.

You receive all this technical documentation free of charge.
Further copies are available against the payment of a fee.

MEIKO very much hopes that you will enjoy our product and use it successfully.

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1.1 Storage

Always store the operating instructions close to the installation!
The operating instructions must always be kept within easy reach!

1.2 Name and address of manufacturer

Please address any queries, technical problems etc. directly to:

MEIKO Maschinenbau GmbH & Co. KG
PO Box 2040
D - 77652 OFFENBURG
Phone + 49 / 781 / 203-0
Fax: +49 / 781 / 203 - 1121 (Export)
http://www.meiko.de

or:

EVOCARE AUSTRALIA PTY LIMITED
A.B.N. 98 078 566 604
Trading as **EVOCARE** and **L&M EQUIPMENT**
P.O. Box 1144, Stafford Qld. 4053
Ph: 07 3355 8000 Fax: 07 3355 5043
Website: http://www.evocare.com.au
Email: sales@evocare.com.au
workshop@evocare.com.au
warehouse@evocare.com.au
accounts@evocare.com.au

Quality Management · ISO 9001
Global-Mark.com.au®

1.3 Description of the type of equipment

Please provide the following information on any query and/or when ordering spare parts.
Please provide the following information on any query and/or when ordering spare parts:

Machine type: _____

Order number: _____

Position: _____

Serial number: _____

Year machine constructed: _____

This information can be found on the plate.

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2 Explanation of the safety symbols used

The following safety symbols will appear throughout these operating instructions. The purpose of these symbols is to draw the reader's attention to the text of the adjacent safety information.

ATTENTION!	This symbol warns that there is danger to human life and health.
DANGER!	This symbol warns that there is danger to the installation, to material or to the environment.
	This symbol denotes information that helps you to understand the installation's operation.
	Warning of dangerous electrical current!
	Warning of possible hand injuries!
	No splashing water: prohibits the use of a high pressure hose.
	Danger of explosion: indicates a potential explosion hazard.
	Non-potable water: The water is not for drinking. Health can be endangered by drinking.
	Danger of burning: indicates possible hazard due to hot surfaces or media.

3 Use of the appliance for the purpose intended

DANGER!

The dishwashing machine EcoStar 545 D-M has exclusively been designed for the washing of dishes, cutlery and glasses.

The washing machine must be used only in accordance with regulations. Other uses are prohibited. The items to be washed must be suitable for washing in dish-washing machines.

The EcoStar 545 D-M dishwashing machine is a technically-based piece of equipment (and is not a consumer product within the meaning of the provisions of the Equipment and Product Safety Act). It is intended solely for use in commercial (i.e. non-domestic) situations.

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4 CE-Declaration of Conformity

CE - Konformitätserklärung

Datum: 2009-12-29 (Update)

CE Declaration of Conformity / Déclaration de conformité CE / Dichiarazione di conformità CE / Declaración de conformidad CE / CE-conformiteitsverklaring

Firma / Company/Société / Ditta / Empresa / Fabrikant:
Adresse / Address / Adresse / Indirizzo / Dirección / Adres:

MEIKO Maschinenbau GmbH & Co. KG
Englerstraße 3
D-77652 Offenburg
E-mail: info@meiko.de

Auftrag Nr.
Order no. / No. de commande / No. d'ordine / No. de pedido / Opdracht nr.:

Spülmaschine Typ Dishwasher model Lave-vaisselle modèle Lavastoviglie modello Lavavajillas modelo Modelo de lavavajillas Vaatwasmachine model						
FV 28 G **FV 28 GiO** **FV 40.2** **FV 40.2 G** **FV 60.2** **FV 70.2**	**FV 130 B** **FV 250 B** **FV 130.2** **FV 250.2**	**DV 80 T** **DV 80.2** **DV 125.2**	**DV 120.2** **DV 200.2** **DV 200.2 PW** **DV 270 B** **DV 270.2**	**EcoStar 430 F** **EcoStar 530 F-M** **EcoStar 545 D-M**	**OR 50 H** **GK 60**

Konformitätserklärung
Declaration of Conformity / Déclaration de conformité / Dichiarazione di conformità / Declaración de conformidad / Conformitetsverklaring:

Hiermit bescheinigen wir in alleiniger Verantwortung die Konformität des Erzeugnisses mit den grundlegenden Anforderungen der folgenden EG-Richtlinien, harmonisierten Normen, nationalen Normen.

We hereby declare at our sole responsibility that the product conforms to the essential requirements of the following EC Directives, harmonized standards, nation standards.

Par la présente nous certifions sous notre seule responsabilité la conformité du produit avec les exigences fondamentales des directives CE, normes harmonisées et normes nationales suivantes.

Con la presente dichiariamo sotto la nostra responsabilità la conformità del prodotto con i regolamenti basilari delle seguenti direttive CE, normative armonizzate e normative nazionali.

Por la presente declaramos bajo nuestra sola responsabilidad que nuestros productos están en conformidad con las exigencias básicas de las siguientes directiv de la CE, normas homologadas y normas nacionales.

Hiermee verklaren wij onder geheel eigen verantwoordelijkheid de conformiteit van het product met de fundamentele en gestelde eisen volgens EG-richtlijnen, geharmoniseerde normen en nationale normen.

EG-Richtlinie / EC Directive / Directive CE / Regolamento CE / Directiva CE / EG-richtlijn

2006/42/EG

Offenburg, 18.12.2009

Dokumentationsverantwortlicher: Responsible for documentation / Responsable de la documentation / Responsabile della documentazione/ Responsable de la documentación / Voor deze documentatie verantwoordelijk

Daniel Ratano
MEIKO Maschinenbau GmbH & Co. KG, Englerstr. 3 – 77652 Offenburg - Germany

Unterschrift / Signature / Signature / Firma / Firma / Handtekening
Konstruktion / Design Engineering Department / Dpt. Construction / Reparto Costruzione / Depto. de diseño / Constructie

MEIKO Maschinenbau GmbH & Co. KG

ppa.
(per procura)

Dr. Thomas Peukert
(Leiter Entwicklung und Konstruktion)
Head of Development / Design / Responsable Développement / Construction / Direttore Sviluppo / Costruzione / Jefe de la sección de desarrollo y diseño / Chef Ontwikkeling/Constructie

DIN EN ISO 9001
Zertifikat Nr. 71 100 7 001

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5 General safety information

5.1 Operator's duty of care

IMPORTANT!

The dishwashing machine has been constructed based on a risk analysis and after careful selection of the applicable harmonized standards, as well as additional technical specifications. It therefore corresponds to the latest technology and is guaranteed to provide maximum safety.
This level of safety can only be achieved in practice, however, if all the necessary measures are taken. The operator of the installation has an obligation of care to ensure that these measures are scheduled, and also to check that they are correctly executed.

Measures to ensure the safe machine operation:

IMPORTANT!

The operator must ensure in particular that ...

... the washing machine is only used in accordance with the regulations.
Should it be used in any other way, damage or danger may occur, for which we accept no liability (see the chapter on "Use for the Purpose Intended“).

... in order to preserve the operational and safety guarantees, whenever required, only original parts supplied by the manufacturer are used.
the user will lose the right to any possible claims if the appliance is modified using any parts other than original parts.

IMPORTANT!

... only appropriately qualified and authorized personnel use, maintain, and repair the installation.

IMPORTANT!

... the relevant personnel is regularly trained in all questions relating to safety at work and environmental protection and, in particular, that they are familiar with the operating instructions as well as with the safety information provided in them.

IMPORTANT!

... the installation is only operated in perfect, operationally efficient condition, all safeguards and cladding panels are installed, and, in particular, that the safety systems and switch elements are regularly checked for their operational efficiency

IMPORTANT!

... machines accessible only from behind may be operated only with rear panel cladding.

IMPORTANT!

... the required personal protective equipment is made available to maintenance and repair personnel, and is worn by them.

IMPORTANT!

..... a functional test on all safety systems of the machine / installation is carried out during every regular maintenance.

IMPORTANT!

... the operating instructions are always kept in legible, complete condition at the place where the installation is installed, and are always at hand.

IMPORTANT!

.... any necessary initial tests to parts supplied by sub-suppliers must be carried out. More detailed information, if required, can be found in the relevant Instructions for Use.

IMPORTANT!

Once the Multi washer has been installed, put into service and handed over to the customer/operator, no modifications (electricalOnce the Multi washer has been installed, put into service and handed over to the customer/operator, no modifications (electrical or location modifications, for example) may be made.Once the Multi washer has been installed, put into service and handed over to the customer/operator, no modifications (electrical or location modifications, for example) may be made.Once the Multi washer has been installed, put into service and handed over to the customer/operator, no modifications (electrical or location modifications, for example) may be made.

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IMPORTANT!

.... equipment for optimising energy consumption must not be used to reduce essential operating temperatures, as set out in DIN 10511.10512 and 10522. If you, the client, install equipment for optimising energy consumption, any possible reduction in the quality of the wash and hygiene is your responsibility.

5.2 Basic safety measures

IMPORTANT!

Danger can arise from the improper use of the machine or if it is used for purposes for which it was not intended.

Parts carrying electric current as well as moving or rotating parts can cause
- Dangers to the user's life and limb and
- Material damage

entstehen.

IMPORTANT!

The machine may only be operated by adequately qualified staff who have been trained by the operating company and who have been trained about the Hazard and Safety Instructions.
Qualified staff, as defined by the Operating Instructions, are persons:
- who are over 14 years of age,
- who, because of their training, experience, instruction and knowledge of the relevant standards, regulations, accident prevention instructions and operating conditions, have been authorised by the person responsible for the safety of the machine to carry out the necessary activities, and who therefore are aware of the possible dangers and how to avoid them,
- who have been trained in first aid and in the on-site rescue arrangements,
- who have read and who observe the safety instructions,
- who have read and who observe the Operating Instructions (or the part applicable to the work to be carried out).

The machine operates with hot water.(Temperature of wash water = 58-60 °C, by Cleaning and disinfection machine must be 74 °CThe machine operates with hot water.).Avoid all contact with the rinse water.Danger of scalding/burning! Please observe appropriate protective measures.
Observe all the instructions posted on the machine.

Warning !
When electrical equipment is in operation, it is inevitable that certain parts carry a dangerous current.
ALL current to the whole machine MUST be switched off before the machine's cladding or electrical equipment is opened.
PLACE THE (ON SITE) MAIN SWITCH IN THE "OFF" POSITION and install suitable security measures to prevent the switch from being switched on.
Only specialist personnel may carry out repairs and rectification work on the electrical part of the machine. The Health and Safety Regulations must be observed.
The machine may be used again only after **all cladding panels** have been installed by the user of the machine.

The machine may **not** be sprayed with a water hose or high-pressure cleaner.

IMPORTANT!

The machine must only be operated under the supervision of instructed staff.

The water in the wash-up area is non-potable and can´t be used for food preparation!

IMPORTANT!

If you are unsure about the operation of the machine, the machine must not be used.

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Do not place any solvents or other easily flammable substances in the wash-up area, as this increases explosion hazard

The appliance must not be used to transfer waste water from other sources into the drain.

Steel scrub pads are not to be used for the pre-scouring nor for cleaning the items to be washed.

Do not wash any metal items in the machine which are not made of stainless steel.

The in-coming of metal parts (especially iron, tinplate, copper) must absolutely be avoided.

The appliance must not be used to transfer waste water from other sources into the drain (Warning: risk of corrosion and blockage).

Only use suitable products for cleaning the stainless steel surfaces, which do not attack the material, form any deposits, nor cause any discolorations.

The hood MUST be closed.
Open the hood very carefully during the programme cycle, as otherwise wash water could splash out.

The tank heating element may still be hot after the tank has been emptied. There is therefore the danger of burns when the machine is cleaned manually.

Only detergents and rinse-aids suitable for the use in industrial dishwashers may be used.

Corresponding information is submitted by the manufacturers of such products.

Detergents and rinse agents can be injurious to health.

The manufacturers hazard instructions on the original packaging and in the safety data sheets must be observed.

The main switch must be turned off when operation has finished.
The accompanying Operating Instructions must be observed for accessory devices, e.g. water treatment installations.

WE ACCEPT NO LIABILITY FOR DAMAGE OR INJURY ARISING FROM FAILURE TO OBSERVE AND ABIDE BY THESE SAFETY INSTRUCTIONS!!!

5.2.1 Working on electrical equipment

Any repair work and repairs to the power supply on the installation's electrical equipment may only be carried out by a qualified electrician!

Check the electrical equipment regularly! Tighten any loose connections! Replace any damaged leads/cables immediately!

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6 Delivery, shipping, installation and assembly

6.1 Delivery

Check that the delivery is complete immediately after receiving it by comparing it to MEIKO's contract confirmation and/or the delivery note.

If necessary, complain about any missing parts immediately to the shipping company and notify MEIKO.

Examine the appliance for possible transit damage.

Should you suspect any damage has occurred during shipping, you should inform:

- the shipping company,
- and MEIKO

in writing, and also send a photo of the damaged parts to MEIKO.

ATTENTION!

Damaged appliances must not be commissioned.

6.2 Transport, installation and assembly

In order to avoid damage or life-threatening injuries during shipping of the installation, the following points must be observed:

ATTENTION!

- The shipping operations may only be carried out by qualified persons who observe the safety instructions.
- Observe transport instructions on the packing.
- The appliance must be moved with great care.
- Unpack the machine.

In order to ensure safe shipping, the installation parts are placed on a special four-sided wooden frame.

Incoming goods should only arrive on these wooden frames.Incoming goods should only arrive on these wooden frames. The packing is specifically designed to allow the appliances to be moved safely and securely using a pallet truck.

The enclosed technical sheet indicates the connection and consumption ratings of the appliance.

ATTENTION!

Small quantities of steam may escape from the hood of the appliance. Furniture and equipment situated near the hood must be protected.

An engineer from your local MEIKO Service Centre can install the appliance at the correct point and connect the tables - upon request. An engineer from your local MEIKO Service Centre can install the appliance at the correct point and connect the tables - upon request.

The following must be observed during the installation of the dishwashing machine:

- The complete unit must be levelled in both directions using a water level.
- Compensate for an uneven floor by adjusting the feet.
- Table joints must be sealed with detergent-resistant sealing compound (e.g. silicone).

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6.3 Operating conditions

It is taken for granted that the planning of the system, as well as installation, setting in operation and maintenance works are executed by sufficiently instructed staff and that these works are checked by responsible specialists. The indications on the name plate of the machine must correspond to the technical sheet and the local connection conditions.

Conditions to be provided by the customer:

- Frost free storage and installation area
- Electrical connection in accordance with the technical sheet
- Fresh water connection in accordance with the technical sheet
- Waste water connection in accordance with the technical sheet
- Anti-slip floor coverings should be provided around the washing appliance.

6.3.1 Requirements for the installation area

- Ensure that the storage and installation area is permanently frost free.

The machine is only frost-resistant in the state it is delivered or when provided with special features (option: frost drainage). If the appliance is installed in an area where the surrounding temperatures are below freezing point, the water freezing inside can damage the internal water components such as pump, solenoid valve, boiler, etc.

6.4 Requirements for the electrical connection

Work on the electrical part of the machine may only be undertaken by specialist personnel.

The customer must guarantee the following points relating to the connection:

- The correct voltage and type of current must be available
- Mains supply lines must be protected according to regulations and provided with a main switch.
- Appliances must have a fixed connection and equi-potential bonding.
- If an unearthed neutral (N) is used with threephase current, the main switch must have 4-poles (with alternating current 2-poles).
- For connection to three-phase current a 5-pole terminal strip (L1, L2, L3, N, PE) must be used.
- Electricity supply without neutral conductor (N): when connecting to three-phase current, use a 4-pole clamping strip (L1, L2, L3, PE).
- Conductor colors: live conductor L1 = black/1, L2 = brown/2, L3 = black/3, neutral conductor N = blue/4, protective earthing conductor PE = green-yellow.

ATTENTION!

Protective measures as well as the connection of the equi-potential bonding must be carried out according to DIN VDE 0100-540 and conform to the local power utilities regulations.

Do not protect by fuses any additional consumers together with the dishwashing machine.

- All conductor fixing screws must be re-tightened before commissioning the appliance.

The wiring diagram is behind the front panel, resp. front cladding of the appliance.
The enclosed wiring diagram must remain in the appliance.

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6.5 Requirements for the fresh water connection

Each appliance carries the DVGW test symbol and does not require an extra safety valve in the water feed.

- Fresh water connection must be made according to EN 1717 or according to local regulations.

ATTENTION!

The minimum flow pressure of the clean water supply upstream of the solenoid valve must be 0,6 bar and if water-softening equipment (EW 10) is incorporated into the machine: 3bar.
The maximum pressure must not exceed 5 bar

- If the flow pressure is below the minimum, increase the flow pressure with a booster pump; if the maximum pressure is exceeded, limit it with a pressure reducer.
- Suitable protective measures must be taken to ensure that no iron particles can enter the appliance via the mains water supply. Similarly, precautions must be taken to prevent the entry of other metal particles, for example copper turnings. Corresponding instructions are contained in the installation drawing. Therefore suitable measures must be taken.
- A dirt trap must be fitted into the fresh water supply to protect the solenoid valve.

6.6 Requirements for the waste water connection

- Build an odour trap into the waste water connection if this is not already built-in (further information about this is in the Installation drawing / Technical Sheet).
- The drain hose must be connected to the waste water pipe in the building.
- A grease trap may be needed, depending on the machine application.

6.7 Emergency-off

- Set the local main switch to „OFF“ or switch off the local main fuse.

6.8 Chemicals for the operation of the appliance

ATTENTION!

Only alkali detergents and acid rinse agents suitable for use in commercial dishwashers may be used. Corresponding information is submitted by the manufacturers of such products.

MEIKO recommends brand cleaning products from leading manufacturers. - cleaning and hygiene products MEIKO LON are an excellent choice.

If unsuitable products are used, the life expectancy of the dosing units can be reduced considerably.

Observe the dosing instructions of the manufacturer.

Detergents and rinse-aids can present a health hazard if they are not correctly used. Please observe the manufacturers' instructions on the original packing and on the safety data sheets.

If a de-scaling agent is used, please strictly observe the manufacturer's instructions reg. handling and safety. After having used such an agent, the product must be completely removed from the machine, as even small residues are sufficient to destroy plastic parts and packing materials.

Chemical product settings
The correct settings for the quantity of detergent and rinse agent depend on the product used.
The relevant chemical supplier can install the correct setting.

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6.9 Instructions for the disposal of the packaging material

- The four-sided wooden frame consists of untreated, raw wood.
  Special country-specific import regulations may also stipulate the use of wood which has been treated against pests.
- The plastic sheeting (PE sheeting) may be recycled.
- The cardboard packaging material used to protect the edges can also be recycled.
- The steel tensioning strap made of strip steel may be recycled with the steel scrap.
- The plastic tensioning strap of plastic (PP) can be recycled.

7 Settings for initial commissioning by the service engineer

7.1 Commissioning

In order to avoid damage to the installation and the injury and death of persons when commissioning the installation, the following points must be observed without fail:
Any necessary initial tests to parts supplied by sub-suppliers must be carried out. More detailed information, if required, can be found in the relevant Instructions for Use.

ATTENTION!

- The installation may only be commissioned by suitably qualified persons observing the safety instructions.
- Before initial startup, check that any tools and parts not belonging to the installation have been removed.
- Check whether any escaping liquid is removed.
- Activate all the safety systems and hood switch before commissioning.
- Check that all screw connections are tight.
- Please also read the chapter on “General safety instructions ".
- Commissioning and instructions will be provided by technicians specially trained by Meiko. The operator may only use the installation after training has been provided.

8 Washing with dish-washer

The appliance must not be used without a thorough knowledge of the ”Operating Instructions“. Incorrect operation could result in injuries to personnel or damage to the appliance.

8.1 Operating panel

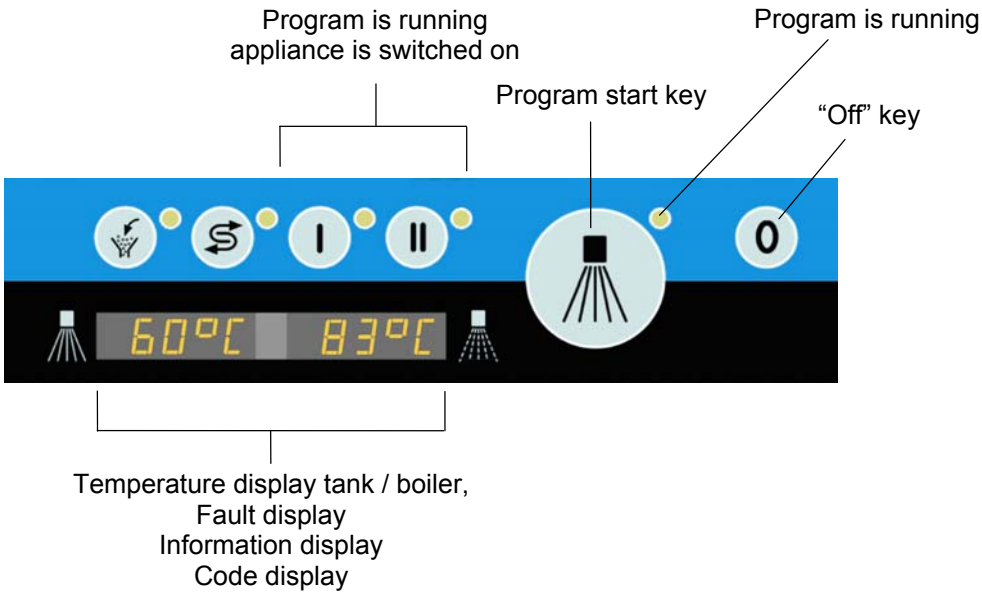

Illustration 1; Operating panel

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Key / display	Meaning
	Short program – Wash programme I
	Normal program – Wash program II
	Intensive program – Wash program III
	Wash temperature
	Final rinse temperature
	Program start Tank drain Self-cleaning cycle
	Switch off appliance/ Cycle interruption

Table 1; Program key function / items to be washed

8.2 Preparation for washing and rinsing

The preparatory work described below must be carried out before each operation.

- Open the hood.
- Place the screen and stand pipe in position.
- Close the hood.

Danger of crushing!
Close the appliance with both hands.

- Switch on the appliance by pressing one of the program pre-selection keys.

During the filling and heating phase, the light above the pre-selection key will flash. When the light remains constantly lit, the machine is ready for operation.

The time until the operation readiness is reached depends on the temperature of the supplied water and the installed boiler, resp. tank heating capacity.

In the case of cold water supply, the time taken is: about 25 minutes.

8.3 Manual dosing of detergent

If there is no detergent dosing pump, the detergent must be added manually to the washing water. To obtain a concentration of 2 g/l, an initial amount of 40 g and a later addition of 30 g after each of 5 cycles should be added.
If the detergent is in powder form, the powder should be scattered evenly on the water in the tank and dissolved after the tank has been filled. This will prevent discolouration of stainless steel parts.

8.4 Automatic dosing

The required detergent (detergent dosing pump: option) and rinse aid is transported out of the containers into the tank, resp. boiler, via electronically controlled dosing units. The dosing is effected automatically acc. to the requirements arising during the wash process.

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ATTENTION!

If unsuitable products are used, the life of the dosing equipment will be significantly shortened.

We therefore recommend that detergents should have a pH value greater than 7 and that rinse agents should have a pH value between 7 and 2.

8.5 Operation during washing and rinsing cycle

The following fundamental principles must be observed when placing the items to be washed in the baskets:

- All hollow containers must always to be **loaded upside down**. Otherwise the water will be trapped inside and they will not dry to a brilliant finish.
- Plates, trays and big plates should always stand at a **slight angle** in the basket. The inside faces pointing upwards.
- When using cutlery baskets, ensure that cutlery is always inserted handle down.
- Load the cutlery baskets with a **mixture** of spoons, knives and forks, as identical items of cutlery can be too close together.
- Do **not overload** the baskets.
- Do not stack **the dishes in the wash basket directly on top of each other.** As the wash water could not strike the items directly and unnecessarily long wash times would have to be selected. Short wash times with baskets which are not overloaded are much more economical

8.5.1 Start the wash cycle

Program start key

- Pre-wash the dishware (major food residues, serviettes, tooth picks, etc.) and place in the basket.
- Place the basket in the appliance, ensuring that it is correctly centred.
- Close the hood.
- Press the program start key or press down the hood rod.

The appliance washes and rinses automatically and switches off the wash program after completion. The program cycle is indicated by a light on the program start key.

The wash time can differ from the set program time if the boiler heating capacity is not sufficient for heating up the fresh water to the pre-set boiler temperature during the program time. In this case, the automatic wash time extension is activated.

8.5.2 Remove the cleaned items

- When the light goes out, open the hood and remove the basket.

In case of Airbox AktivAir

After the wash is finished the extraction fan is switched on for three minutes.
The steam coming from the tank partially condensates and goes back into the tank. The rest mixes into the air so that steam formation is minimised

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9 Shutting down the dishwasher

- Press the OFF-key. The machine is switched off when all the lights are out.
- Remove the stand-pipe.

Machines without built-in drain pump:

- After the water has been drained from the tank, the tank is sprayed with clean hot water by pressing the Program Start button. The hood must remain closed.

Machines with built-in drain pump:

- Press the program start key to drain the tank.
- The tank interior is sprayed with clean hot water after the tank water has been drained. The hood must remain closed. The waste water pump switches off automatically.

10 Care and maintenance

10.1 Care, general

The appliance has been designed to minimise the need for cleaning, care and maintenance.

However, for a reliable, safe and permanent function of the appliance and in the interest of hygiene and cleanliness a correct care and maintenance is necessary.

To facilitate this procedure, a maintenance contract can be concluded with the manufacturer or the manufacturer's agent.

ATTENTION!

Works/repairs which were not correctly executed and the use of unauthorised parts by unqualified personnel endanger both operators and the appliance, and will invalidate the warranty.

10.2 Refilling of detergent

External container

The container is located next to the appliance.

- Check the filling level of the container and if necessary, replace it by a full one.

ATTENTION!

Only non-foaming alkali detergents (pH > 7) suitable for commercial dishwashers may be used.

Detergent dosing units must be checked to see if they are functioning properly if there is reason to believe that they are malfunctioning. Carry out a visual inspection!

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10.3 Refilling with rinse aid

External container

The container is located next to the appliance.

- Check the level and, if necessary, replace the container by a full one.

Only non-foaming acid rinse aid (pH < 7) suitable for commercial dishwashers may be used.

Detergent dosing units must be checked to see if they are functioning properly if there is reason to believe that they are malfunctioning. Carry out a visual inspection!

10.4 Cleaning

After the tank has been drained, proceed as follows:

- Do not use a foaming detergent for dish-washing by hand for pre-cleaning close to the dish-washer. Foam can cause malfunctions in the dish-washer and a poor wash.
- Food residues sticking to the tank, tank heating element and sieves must be removed with a brush.
- Disassemble the wash arms and rinse them with flowing water.
- Wash nozzles must be cleaned daily.
- The cleanliness of final rinse nozzles must be checked weekly and if necessary clean under running water.

The inserts for the final rinse nozzles must be inserted with the prongs facing the water flow

10.4.1 Safety instructions for cleaning

The tank heating element may still be hot after the tank has been emptied. There is therefore the danger of burns when the machine is cleaned manually.

The machine, switch cabinet and other electrical components must NOT be sprayed with a hose or a high pressure cleaner.

10.5 Maintenance of stainless steel surfaces

The appliance is made of high-quality stainless steel. Nevertheless, under certain conditions corrosion may appear.

To maintain stainless steel surfaces permanently free from corrosion use

- only cleaning products which are properly.

Use only products which do not attack the material, build up a film or cause discoloration.

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10.6 De-scaling

If the appliance was operated with hard water, the boiler and wash tank could have lime scale deposits. De-scaling of the tank interior, boiler housing, tank heating, boiler heating and wash and final rinse system then becomes necessary.

ATTENTION!

For de-scaling the appliance use only products suitable for industrial dishwashers. Please observe the instructions of the manufacturers of such products.

After de-scaling the appliance:

- Remove the de-scaling agent completely from the appliance. 1 or 2 rinse cycles with fresh water are necessary to achieve this.

Even small residues of de-scaling agents can be sufficient to destroy plastic parts and sealing materials! If the appliance is heavily scaled, you should ask a service engineer from the agency responsible to de-scale the boiler.

11 Machine with built-in water softening device EW10

(Not in case of machines with air gap)

11.1 General

If the red lamp lights up, the capacity of the water softener has been almost exhausted. About a further 10 program cycles are possible before the water softener is completely exhausted. It is therefore possible to delay the necessary regeneration until a time when the machine is not in use.

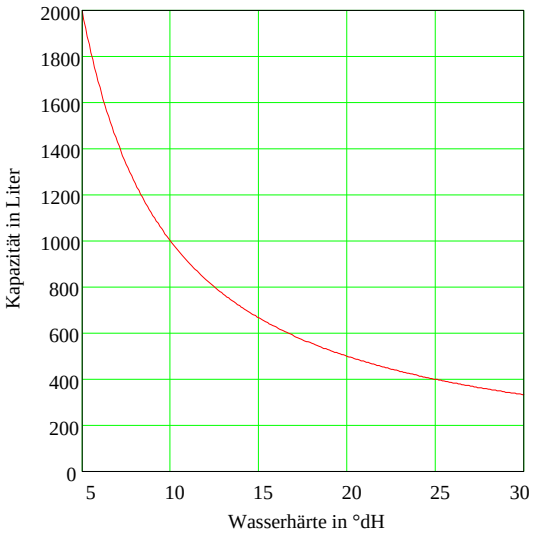
ATTENTION!

It is important to note that if the machine continues to be used when the water softener is exhausted, capacity can be reduced and the machine may even become unusable.

11.2 Adjustment of water hardness

The water softening device is pre-set to 30°Gh in the factory. When the service engineer installs or commissions the appliance he should adjust this value depending on the actual water hardness. Should there be any further changes in the water hardness, this parameter must be adjusted accordingly as set out in the Short Programming Instructions.

11.3 Capacity of the built-in water softening device



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11.4 Regeneration

Press the OFF-key.

Remove the stand-pipe, empty the tank.

Fill the salt solution container with 0.8 kg regenerating salt. A funnel can be used for this if necessary.

By regenerating salt we mean here sodium chloride with a grain size of 0.3 to 1 mm.

ATTENTION!

The seal and the thread of the salt solution container must be cleaned before closing the container. Carefully lock the salt solution container cover. The penetration of wash water can reduce the capacity of the built-in water softening device.

- Press the regeneration button.
- The regeneration process starts automatically and lasts for about 25 minutes.

The machine cannot be used during this time. The hood must remain closed.

The regeneration process is indicated by a yellow light. The machine can be filled again when the light has gone out.

- Even if the red light has not come on to indicate that the water softener is exhausted, the regeneration process can be started by pressing the regeneration button for at least 3 seconds.

ATTENTION!

We recommend that you fill the machine immediately after the regeneration process in order to dissolve and remove from the wash tank any salt particles that have been spilled.
If the salt remains in the wash tank for a lengt hyperiod, this can result in corrosion and even pitting corrosion in the bottom of the tank.

12 Basic information on the appliance

Each dishwashing machine is manufactured acc. to the latest state of the art technology. Operation is safe.

ATTENTION!

Dangers could arise from this model, if it is not correctly operated by unsuitable operating staff or if it is not used acc. to it's purpose.

Liability

We accept no responsibility for damage of the appliance and other objects caused by operating faults, resp. non-observance of the operating instructions. Any modifications to the appliance - especially technical modifications inside - undertaken by unauthorised persons without the written permission of the manufacturer will invalidate the warranty.

12.1 General description of the washing machine

12.1.1 Execution

Square basket appliance with stationary basket

12.1.2 Wash principle

The appliance has one wash and one final rinse cycle.

The temperature regulator keeps the wash temperature. A centrifugal pump circulates the water out of the cleaning tank into the clean nozzles. The water jets reach the items to be cleaned out of differing directions. Therefore an even washing result can be guaranteed.

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The cleaning cycle is followed by the fresh water final rinse. The items are rinsed via a separate nozzle system with hot fresh water 80 - 83° C. Thus heating up the items for the following drying process. At the same time the final rinse water serves for the regeneration of the wash water, the level of soil of the wash water thus being reduced.

12.1.3 Disinfection machine with A0 control

The standard factory setting is A0 = 30.

The tank temperature for washing is 74 °C. Tank heating is active while washing. After every second as of 65° C in the wash tank the measured tank temperature is allocated one factor (the higher the temperature, the higher the factor). These factors are continually added until the desired hygiene value, e.g. A0 30, has been reached. The dripping phase and final rinse begin when the wash time set in the programme is reached or exceeded.

The display indicates the A0 value.

12.1.4 Disinfection machine with Thermolabel control

Thermolabel = measuring tape that changes colour after 4 seconds at 71 °C and shows the required hygiene value.

The tank water is heated up to 71 °C during washing. After a brief stop time the dripping pause and the final rinsing starts as long as the washing time set in the programme has been reached or exceeded.

Both method makes it possible to achieve disinfection levels higher than the standard (e.g. in hospitals).

The tank temperature falls when the programme begins, depending on the washware. The time needed to reach the set disinfection parameters could exceed the set programme time.

ATTENTION!

High washing temperatures and long retention times in the wash tank can lead to glass corrosion and premature peeling of the decor.

12.1.5 Detergent dosage

The detergent dosing unit (option) is designed for the automatic adding of liquid, alkaline detergent into the wash water.

The detergent is transported out of the container into the wash tank by means of a hose line. The dosing unit is self-priming. The dosing is effected during each filling cycle and at the beginning of each programme cycle using timer control.

Normally, a dosing of approx. 2 ml of detergent per liter of tank water is the correct concentration. This can be increased/reduced acc. to the water quality, items to be washed and degree of soiling to 5 ml/l or to1 ml/l.

12.1.6 Rinse aid dosing

The rinse aid dosing unit is designed to automatically add liquid final rinse aid into the fresh water.

The rinse aid is transported out of the container into the fresh water supply line by means of a hose line. The dosing unit is self-priming. The dosing takes place during each filling cycle.

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The correct dosing results in a smooth, even water film.

In case of overdosing, there are bubble and stripe formations - reduce dosing.

In case of under-dosing, water drops remain on the washed items - increase dosing.

12.1.7 Airbox AktivAir

After the wash is finished the extraction fan is switched on for three minutes. The time can be set using a time relay. Times shorter than three minutes should not be set because otherwise residual moisture would stay in the housing and possibly damage the fan motor.

12.2 Noise level

Work place noise level $L_{pA} \leq 70$ dB

12.3 Data reg. the electrical and hydraulic equipment

See attached technical sheet

12.4 Dimensions, technical data, installation instructions

See attached technical sheet

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13 Tips for self-help in the case of faults

Fault:	Remedy
Machine does not fill.	• No water available • Dirt trap blocked • Level switch defective • Solenoid valve defective • Hood safety switch defective
Rinse water does not spray!	• No water available • Dirt trap blocked • Solenoid valve defective • Booster pump has failed (with air gap) • Fresh water rinse system furred
Stripes and smears on the dishes!	• Rinse water mineral content too high (see operating instructions) • If this is observed only at particular times, check water softener for regeneration. This must not carried out during the dishwashing operation. • Water pre-treatment defective or not carried out • Different water type depending on the waterworks • Unsuitable rinse aid products or wrong dosage quantity
Formation of a significant amount of foam in the wash tank!	• Detergent for dish-washing by hand enters the wash tank because of pre-cleaning the dishes • Daily cleaning is carried out with foaming cleansing agents which afterwards enter the machine. • Improve pre-wash, as too much food residue is entering the tank. Alternatively, empty wash tanks between uses. • Rinse water quantity too low • Detergent or rinse aid product not suitable • Temperatures too low < 40°C

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14 Staff training

Only trained and instructed personnel are allowed to work on the dishwashing machine. Staff responsibilities for the installation's operation, maintenance and repair must be clearly defined.
Any personnel undergoing training are only allowed to work on the dishwashing machine installation under the supervision of an experienced person.

persons / Activity	Trained operating personnel	Trained in-house technician	Trained in-house technician or installation engineer
Installation and assembly			◆
Commissioning			◆
Operation, use	◆	◆	◆
Cleaning	◆	◆	◆
Checking safety devices	◆	◆	◆
Fault finding		◆	◆
Troubleshooting, mechanical		◆	◆
Troubleshooting, electrical			◆
Maintenance			◆
Repairs		◆	◆

Training should be recorded in writing.

15 Authorized user of this documentation

The works described in this booklet (chapter 14 - 18) may only be carried out by specialists of the manufacturer, the responsible agency or an authorized dealer.

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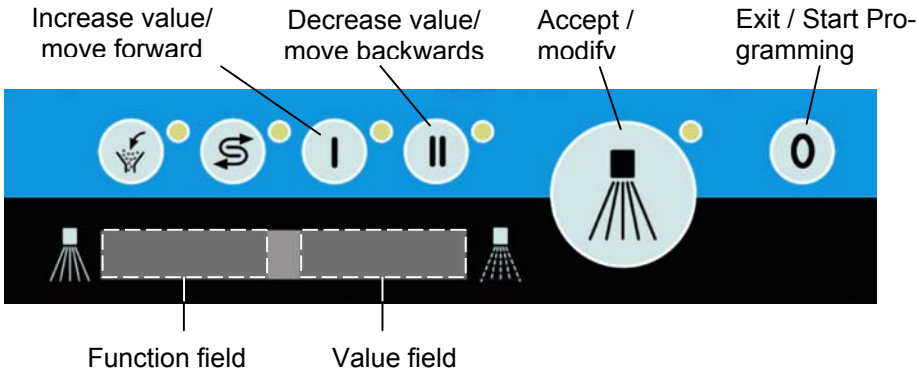
16 Settings / modifications / on-site adaptation

16.1 Using the keyboard for programming



Access codes for various user-levels have been defined. Once the complete code has been entered, the entered code is compared with the internal code table. Depending on the code entered, the corresponding user level will be accessed. 2 access codes are available for each user level; the first is for restricted access, i.e. no modification of parameters is possible (viewing mode), and the second gives access to the entire range of functions (viewing and modification).

In the short programming instructions accompanying every machine in the series, this is described in condensed form.

For control programming, the power supply must be available but the machine must be completely switched off (no LED must be illuminated).

Code – input:

View service data:	CODE 10000
Modify service data:	CODE 10001
View configuration data:	CODE 20000
View dosing technology:	CODE 40000
Modify dosing technology:	CODE 40044

The code numbers for the further levels can be found in the Service Manual.

16.2 Code entry

To get into the code entry mode, you should keep the key “0” pressed (for around 3 seconds) until you see

on the display unit..

By pressing the key “0” once again you can leave the programming area at any time.

The digit to be modified will flash.

Press the “I” key to increase the value/code indicated on the display unit, or press the “II” key to decrease it, or press the “accept” key to save it. The next value will then flash and will be the only one visible.

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If your entry is incorrect you will exit the code entry procedure, and the information code 122 will be displayed.

If you enter all the digits correctly you will arrive at the chosen level, either service, configuration or machine data.

16.3 Service level

The list of service parameters can be found on this level (parameter numbers 1xx). Here you can view these or modify them, or you can also call up the ventilation of the rinse and wash hoses.

On the service level, you will first see the display below:

This corresponds to the viewing/modifying parameters (see 15.3.1)

This corresponds to rinse aid inlet ventilation (see 15.3.2)

This corresponds to detergent inlet ventilation (see 15.3.3)

This corresponds re-setting partial demineralisation display (see 15.3.4)

This corresponds first-time-filling of boiler (see 15.3.5)

Press the “I” key to move forwards or the “II” key to move backwards or the “accept” key to make a selection. You are now at the current level.

You can leave this level by pressing the “0” key.

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16.3.1 View/modify parameters

Indication

this display by pressing the “accept” key.

Now, the first parameter will be displayed with a value.

Press the “I” key to go forwards and the “II” key to go backwards, until the parameter you require is displayed.

Confirm the parameter to be modified by pressing the “accept” key, the value will flash. Increase the value using the "I" key or reduce it using the "II" key and confirm with the "Accept" key.

You can leave this level by pressing the “0” key.

See 15.4 for list of parameters

16.3.2 Ventilating the rinse aid inlet

this display by pressing the “accept” key.

Now the dosage pump will be activated and the remaining running time will be indicated.

You can leave this level by pressing the “0” key. The ventilation will be interrupted off.

16.3.3 Ventilating the detergent inlet

this display by pressing the “accept” key.

Now the dosage pump will be activated and the remaining running time will be indicated.

You can leave this level by pressing the “0” key. The ventilation will be interrupted off.

Should the ventilation process be insufficient, repeat the process.

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The function "vent detergent pipe" is not existing with machines including detergent dosing system type ***ADT*** ('Advanced Dosing Technology with depression dosing). The detergent dosing pipe is vented automatically when the first cycle is running, after filling of the detergent reserve container.

16.3.4 Resetting the TE degree of depletion display

this display by pressing the “accept” key.

If the option "Display degree of depletion" is active during operation with partial demineralization cartridges, the counter has to be reset using the function above after the cartridge has been changed

You can leave this level by pressing the “0” key again.

16.3.5 First-time-filling of boiler

this display by pressing the “accept” key.

After emptying the boiler (repair of descaling) it must be filled with water again before the heater is switched on. This is achieved using this parameterization.

You can leave this level by pressing the “0” key again.

16.3.6 Configuration level

You can find the list of configuration parameters on this level (parameter numbers 2xx). + Here you can view these and modify them. You can also call up the status of the inputs and outputs, or set the outputs for testing.

On the service level, you will first see the display below:

This corresponds to the viewing/modifying parameters. (see 15.3.7)

This corresponds to viewing the status of inputs. (see 15.3.8)

This corresponds to viewing and setting the status of outputs. (see 15.3.9)

Press the “I” key to move forwards or the “II” key to move backwards or the “accept” key to make a selection. You are now at the current level.

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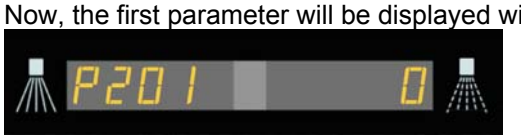
You can leave this level by pressing the “0” key.

16.3.7 Viewing / modifying parameters: (depending on the code entered)

Indication

this display by pressing the “accept” key.

Now, the first parameter will be displayed with a value.



Press the “I” key to move forwards or press the “II” key to move backwards, until the parameter you require is displayed.

Confirm the parameter to be modified by pressing the “accept” key, the value will flash. Increase the value using the "I" key or reduce it using the "II" key and confirm with the "Accept" key.

You can leave this level by pressing the “0” key.

See 15.4 for list of parameters

16.3.8 Viewing input status:

Indication

this display by pressing the “accept” key.

Now, the first digital input will be shown, with status.

Press the “I” key to move forwards and the “II” key to move backwards, until you reach the input you require.

Display: input set

Display: input not set

You can leave this level by pressing the “0” key.

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The direct value (here the boiler temperature) is displayed for the analog inputs. Use the “I“ to go forward and the “II“ to go backward until the desired input is displayed

Assignment details for the inputs are given on the assignment list for each machine.(see 15.5)

16.3.9 Viewing / modifying output status (according to code entered)

Indication

this display by pressing the “accept” key.

Viewing:

Now, the first output will be shown, with status.

Press the “I” key to move forwards and the “II” key to move backwards, until you reach the output you require.

Modifying:

Press the “accept” key to confirm the modification of the output, the value will flash. Press the “I” key to modify the value and press the “accept” key to save it.

The output is now set.

You can leave this level by pressing the “0” key.

Assignment details for the outputs are given on the assignment list for each machine. (see 15.5)

16.3.10 Viewing / modifying dosing technology level

By entering code 40000 (read only) or 40044 (read / enter), the user can access the 4th parameter level summarizing all the dosing technology parameters:

P104, P105, P218, P219, P224, P225, P321, P322, P326, P327.

See 15.4 for list of parameters

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16.4 Parameter list

Par. No.	Configuration options	Use as	value range	Unit	Factory setting	Note
101	Wash program Key 1	Parameters	1 ...50	-	2	Allocate the wash program to the key I Assignment adjustable
102	Wash program Key 2	Parameters	1 ...50	-	3	Allocate the wash program to the key II Assignment adjustable
103	Wash program Key 3	Parameters	1 ...50	-	7	Assign rinse programme -no. of the key I+II pressed together; Assignment adjustable
104	Rinse agent Dosing quantity	Parameters	0.10 ...1.00	ml/Liter water	0.2	Value can be read from the rinse aid container label (dependant on water quality)
105	Rinse program Dosing quantity	Parameters	0.1...20.0	ml/Liter water	2.0	Value can be read from the detergent container label (dependant on water quality)
106	Hardness degree	Parameters	0 ...50	[°dH] (°KH)	30	The quantity of soft water available between two regenerations depends onthe hardness of the water. for partial demineralisation TE too
107	Beep ON/OFF	Parameters	0/1	-	1	Switch on/off acoustic ready message
109	Partial / full desalination available?	Parameters	0,1,2	-	0	Partial / full desalination available? 0: NO 1: partial demineralisation (TE) 2: full desalination (VE)
110	Hardness litres per cartridge type	Parameters	0 ...250	1000 L	120	When the cartridge's capacity is reached (hardness litres/degree of hardness), "Replace Cartridge" will be displayed (INFO 725) (only in the case of TE)
111	Total Operation time Indication	Indication	5 figures	h		Operation time query only
112	Total number of wash cycles	Indication	5 figures	-		Wash cycles/loads, query only
113	Total number of wash cycles since last reset	Indication	5 figures	-		Wash cycles/loads, re-setting possible
114	Serial number	Indication	8 figures	-		Option for calling the serial number
115	Condition Remaining cartridge capacity	Indication	0 ...100	%		Only for partial / full desalination TE: indication in % VE: 100 = OK; 0 = replace
119	Beep ON/OFF	Parameters	0/1	-	1	It is possible to shut off communication via IR interfaces. (0)

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Par. No.	Configuration options	Use as	value range	Unit	Factory setting	Note
120	Total number of wash cycles Indication	Parameters	0/1	-	0	Effective only upon power supply reset ON/OFF **ATTENTION!** All changes to service parameters will be reversed. Power supply reset must be carried out within 5 minutes, otherwise factory settings will not be loaded. Without power supply reset, the information 123 will be displayed.
201	Machine type	Parameters	101 ...104	-	103	101: EcoStar E/A1 (with FA, EW) 102: EcoStar E/A2 (minimuml) 103: EcoStar E/A1 (with new dosing technology / ADT) 104: EcoStar with TL or A0 **ATTENTION!** Attention! Only assignment list and machine sequences change – no parameters
202	Must be-tank temperature	Parameters	10 ...82	°C	60	Standard for all the rinse programs on one appliance! Output dependent on definition.
203	Pre-rinse time	Parameters	0 ...8	sec.	0	See pre-rinse process step
204	Post-rinse time	Parameters	4.0 ...25.0	sec.	10.0	Duration of final rinse time, running time limited by P306!!
205	Operation indicator	Parameters	0 ...10	-	1	Definition of the information which is to be switched via the potential-free contact 0 – no information 1 – Filling/Heating, ready for washing/washing or draining 2 – Filling/Heating, ready for washing/washing 3-Filling / Heating 4 - ready for washing 5 - Washing 6 - Draining 7 - Error 8 – Not status machine OFF and draining 9 - EW active 10 - not status Machine OFF
211	A0-value	Parameters	0 ...60	-	0	Only with LED1! If 0 no A0 calculation, otherwise sum up and display up to the set value.
218	Shortage of rinse aid	Parameters	0/1	-	0	Monitoring Indication
219	Shortage of detergent	Parameters	0/1	-	0	Monitoring Indication

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Par. No.	Configuration options	Use as	value range	Unit	Factory setting	Note
224	Power supply mode	Parameters	0 ...3	-	1	Definition: Energizing rinse aid pump: 0 – no signal 1 – energizing according to calculated running time 2 - energizing as final rinse 3 - energize as wash pump
225	Power supply mode detergent dosing pump	Parameters	0 ...4	-	1	Definition: Energizing detergent pump: 0 – no signal 1 – energizing according to calculated running time 2 - energizing as final rinse 3 - energize as wash pump 4 – Option – detergent pump using negative pressure dosing ADT
228	Water softener EW 10 incorporated?	Parameters	0/1	-	0 or 1	In case of incorporated water softener set to 1
240	Detergent pump activation mode	Parameters	0/1	-	0	Effective only upon power supply reset ON/OFF **ATTENTION!** All changes to service parameters will be reversed. Power supply reset must be carried out within 5 minutes, otherwise factory settings will not be loaded. Without power supply reset, the information 123 will be displayed.
241	Air gap (FA) incorporated?	Parameters	0/1	-	0	0: FA not available, final rinse over Y1 1: FA available, Plug connector
242	Drain pump (LP) incorporated?	Parameters	0/1	-	0	0: LP not incorporated 1: LP incorporated
243	Frost drainage (without FA)	Parameters	0/1	-	0	0: no effect Tank filling before Heating
321	Rinse agent pump output	Parameters	0.1 ...10	l/h	1.3	Rinse agent pump. Output definition.
322	Detergent pump output	Parameters	0.1 ...20	l/h	8.5	Detergent pump Output definition.
326	pipe vent time Rinse agent	Parameters	0 ...255	sec.	180	Activate rinse agent pump temporarily to remove air from pipe.
327	pipe vent time Detergent	Parameters	0 ...100	sec.	30	Activate detergent pump temporarily to remove air from pipe.
346	Indication LED 2 or LED 1	Parameters	0/1	-	1	0: LED2 with LEDs 1: LED1 with temperature display
347	Desinfection temperature	Parameters	10 ...80	°C	0	Only with disinfection machine no.4 in parameter 201
348	Desinfection temperature	Parameters	0 ...90	10 sec.	0	Only with disinfection machine no.4 in parameter 201

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16.5 Assignment list
View inputs / control outputs

Indication		Input / output / other	Conditions
Left	Right		
dIn 1	0/1	Hood closed	none
dIn 2	0/1	Boiler level	none
dIn 3	0/1	Tank level	none
dIn 4	0/1	Hood start	none
dIn 7	0/1	Hall-sensor ADT (option)	none
dIn 9	0/1	Level rinse aid (option)	none
dIn 10	0/1	Level detergents (optin)	none
dIn 12	0/1	Measure conductance VE (optional)	none
AIn 1	83°C	Boiler temperature	none
AIn 2	60°C	Tank temperature	none
out 1.1	0/1	Wash pump	No leak water
out 1.2	0/1	Booster Pump	No leak water
out 1.3	0/1	Drain pump	No leak water
out 2.1	0/1	Rinse aid – dosage pump	No leak water
out 2.2	0/1	Detergent – dosage pump	No leak water
out 2.3	0/1	Tank heating	No leak water
out 3.1	0/1	Filling valve	No leak water
out 3.2	0/1	Soft starter valve	No leak water
out 3.3	0/1	Boiler heating	No leak water
out 3.4	0/1	Operation indicator	No leak water
out 3.5	0/1	EW valve	No leak water

Leak water switch condition: Leak water switch must not have operated.

16.6 Rinse program parameter update: 01.05.2009

Program no.:	Boiler temperature target value	Wash time target value	
		Washing	Total
1	83	44	60
2	83	74	90
3	83	104	120
4	83	134	160
5	83	164	180
6	83	194	210
7	83	224	240
8	83	254	270
9	83	284	300
10	83	344	360
11	65	44	180
12	65	74	210
13	65	104	240

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14	65	134	360
15	65	164	180
16	85	44	60
17	85	74	90
18	85	104	120
19	85	134	150
20	85	164	180
21	85	194	210
22	85	224	240
23	85	254	270
24	85	284	300
25	85	344	360
26	75	44	60
27	75	74	90
28	75	104	120
29	75	134	150
30	75	164	180
31	75	194	210
32	75	224	240
33	75	254	270
34	75	284	300
35	75	344	360
36	65	224	240

The dosage times will be adapted to the rinse time, so that the correct concentration remains if the rinse time is modified.

17 Operating errors

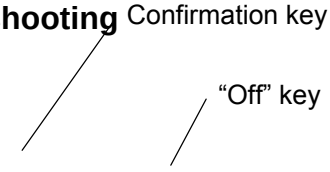
Despite being expertly designed, the machine may develop minor faults which are usually easy to eliminate. This section explains a number of possible problems and how you can deal with them yourself.

Before carrying out work on the open appliance, it MUST be disconnected from the power supply. The local main switch must be switched ”OFF“, or the local main fuse must be removed.

Should any of the operational faults described arise repeatedly, their cause must be established in each case.

Faults not described here can in general only be eliminated by a technician or electrician. Please contact the agency responsible or the authorised dealer.

17.1 Information reporting and troubleshooting



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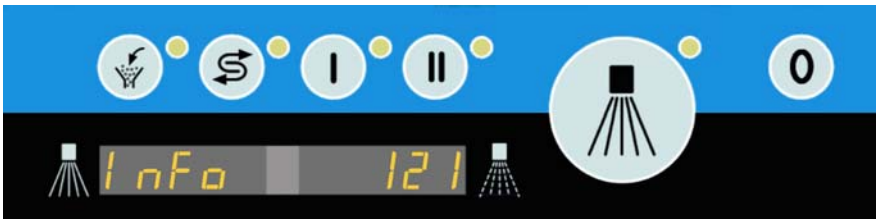

Figure 2: Information display

Information displays can be cleared by pressing the confirmation key.
Provided that the machine function is restored, the next program sequence will begin.
The information display can also be deleted by pressing the “Off” key.

Information indicator (extract)

Info No.	Description	Possible cause
120	Emergency program active Restricted washing possible.	No boiler / tank heating No fresh water supply Check system
121	Hood not closed	Check connection S1 Change microswitch Check microswitch adjustment Replacing a defective I/O circuit board
122	Incorrect password / no authorization	Enter code once again
123	Factory setting parameter list	Switch power supply ON/OFF within 5 and set parameters back to factory settings. This will be rejected and parameters will be re- Information 123 will disappear
420	Shortage of rinse aid	If the machine is ready for operation, a shortage of rinse agent will be signalled (only if there is a built-in warning system).
520	Shortage of detergent	If the machine is ready for operation, a shortage of detergent will be signalled (only if there is a built-in warning system).
521	Shortage of detergent with dosing system ADT	Impulses of the flow meter are recognized, although the detergent dosing is not approached. Valve of the dosing unit is not closing.
522	Error in the dosing system ADT	Impulses of the flow meter are recognized, although the detergent dosing is not approached. Valve of the dosing unit is not closing.
720	Regeneration in progress	Regeneration program has started and is in progress. (It is possible to pause the program, but not cancel it.)
723	Regeneration necessary	The user must start the regeneration. (empty tank, add salt!)

Table 2: Information displays

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17.2 Error messages and troubleshooting

Figure 3: Error messages

Error messages will disappear automatically when the fault has been rectified.

Error messages (extract)

ERR.-No.	Description	Possible cause
001	EEPROM plug-in fault.	EEPROM not available / incorrectly defective Empty or incorrect EEPROM Replace EEPROM with correct parameter set
201	Boiler level not reached during 1st filling (only FA-machines)	Fresh water inlet insufficient (water faucet closed) Entering hose kinked Inlet filter soiled Solenoid valve defective Boiler switch defective
202	Boiler level during filling not reached early enough (only FA-machines)	See 201
203	No change detected by the Plug connector emptying .(only FA - Machine)	Boost pump defective Plug connector loosened Start capacitor defective Plug connector loosened Plug connector loosened Boiler level switch defective No boost pump signal to - from in-put/output circuit boards Check boost pump DSP / S2 using manual control
204	Following the end of final-rinse time, still no change detected (only FA - Machine)	See 203
205	Boiler temperature not reached after max. Heat time (P.310)	Boiler heating defective / thermal fuse radiator Temperature sensor defective, incorrect installation position Boiler contactor defective, performance switch loosened No signal from ON/OFF circuit boards
210	Temperature sensor short circuit	Check sensor cable (plug contacts) Replace sensor Install sensor correctly
211	Temperature sensor interruption	See 210
212	Actual boiler temperature too high(>95°C)	Contactor sticking Incorrect sensor / defective sensor Check sensor / cable

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ERR.-No.	Description	Possible cause
301	Number of final rinse cycles for tank filling exceeded Tank level analysis disrupted	Feeding water pressure too low Sieve in feeding valve is dirty Rinse jets soiled Air trap soiled Condensate in level pipe Hose kinked / loose / not watertight
302	During the self-cleaning programme the tank level (S3) does not fall on time. (Only with built -in drain pump.)	Fresh water supply insufficient (water faucet closed) Drain pump soiled / defective Rotor loose Drain pump plug connector loose Start capacitor defective Tank level analysis disrupted No signal from ON/OFF circuit boards
304	Tank temperature not reached after max. heat time (P.314)	Tank heating defective / thermal fuse Radiator Temperature sensor defective, incorrect installation position Tank protection defective, performance switch loose
310	Temperature sensor short circuit	See 210
311	Temperature sensor interruption	See 211
312	Actual Tank temperature too high (>85°C)	See 212

Table 3: Error messages

Should information or fault numbers not shown in the tables be indicated, or should the suggested measure not lead to the elimination of the fault, please notify a customer service technician.

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18 Maintenance

Maintenance work may only be carried out when the dishwashing machine is shut down. In addition, the dishwashing machine main power switch must be in the OFF position and locked in this position.

Existing safety systems may not be removed!

ATTENTION!

A functional test on all safety systems of the machine / installation is carried out during every regular maintenance

We recommend that you take out a maintenance contract with our manufacturer's agent in order to ensure a long service life.

18.1 Basic safety measures during normal operation

Observe the maintenance periods prescribed in the operating instructions!
Observe the maintenance instructions given in these operating instructions for individual components!

ATTENTION!

Before carrying out any maintenance or repair work, prohibit access to the operating area to any unauthorized persons! Provide or display a sign drawing attention to the maintenance or repair work!

Before carrying out any maintenance and repair work, switch off the electrical power at the main electrical power switch and secure the switch with a padlock! The key for this lock must be kept in the hands of the person carrying out the maintenance and repair work! Failure to observe these precautions can result in severe physical injury or damage to property.

ATTENTION!

Before carrying out any maintenance and repair work, ensure that all the parts of the machine that may be touched have cooled down to room temperature!

Carefully dispose of any cleaning products that could harm the environment!

18.1.1 Before starting operations following maintenance or repair work

ATTENTION!

Before starting operations following maintenance or repair work, all initial tests must be carried out as described in "Machine Settings for Initial Commissioning by the Service Engineer".

18.1.2 Observe the environmental protection regulations

ATTENTION!

Legal obligations relating to the avoidance of waste materials and to their recycling/removal in accordance with applicable regulations must be observed!

In particular, during installation, repair and maintenance work, materials that could pollute water such as: Grease and oils, Cleaning fluids containing solvents, must not pollute the ground or run into the sewerage system! These materials must be stored, shipped, collected and disposed of in suitable containers!

18.2 Dosing units

The dosing units themselves are maintenance free in principle but the working life of the wearing parts (peristaltic tube) is largely dependent on the chemical used.

18.2.1 Change of products

Change of product means that one rinse aid or detergent product is replaced by another. The use of differing products alongside each other can result in break-downs.

- Hose lines and dosing units must always be rinsed out with warm water.

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18.3 Maintenance plan

Maintenance procedures	FV 28G / FV28GIO EcoStar 430 F EcoStar 530 F-M	FV 40.2 / FV 60.2 / FV 70.2 D	GK 60	OR 50 H	EcoStar 545D-M / DV 80.2 / DV 120.2 / DV 125.2 / DV 200.2 / DV 200.2 PW	DV 270 B	FV 130.2 – FV 250.2 / DV 270.2	Component OK	Component faulty	Component replaced
1. Pumps										
Check pumps for watertightness, pump rotor noise, rotation direction and function										
Check pump suction										
Check pump sieves correctly fitting and operating correctly										
Check sliding ring washer/contra-rotation ring										
2. Wash systems										
Check water level in tank										
Check that wash water pipe is watertight										
Check washing system is complete and produces correct spray pattern										
Check wash arm hubs										
3. Fresh water rinse										
Check flow pressure/water pressure										
Check rinsing system is complete and produces correct spray pattern										
Check that system is watertight										
4. Housing and mounting parts										
Check housing, tank, sheet metal cover, hood, doors and covering of machine base for damage and correct operation										
Check tank cover sieves										
Check boiler, hoses, clamps, plastic parts and seals										
Check operation of raising and lowering equipment										
5. Fresh water installation										
Check level regulation										
Check valves, clean dirt trap										
Check that all connections (incl. hand spray) are watertight										
Check settings of built-in water softener (if fitted)										
Check operation of complete or partial water softener (if fitted)										
Check water hardness										
6. Waste water equipment										
Check if watertight										
Check pressure hose position and operation of drain pump										
7. Electrical installation										
Check of all fuses										
Tighten all electrical connections										
Check tank and boiler heating										
Check thermostat and stop switch										
8. Detergent dosing										
Check dosage, adjust if necessary										
9. Rinse aid dosing										
Check dosage, adjust if necessary										

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Maintenance procedures	FV 28G / FV28GIO EcoStar 430 F EcoStar 530 F-M	FV 40.2 / FV 60.2 / FV 70.2 D	GK 60	OR 50 H	EcoStar 545D-M / DV 80.2 / DV 120.2 / DV 125.2 / DV 200.2 / DV 200.2 PW	DV 270 B	FV 130.2 – FV 250.2 / DV 270.2	Component OK	Component faulty	Component replaced
10. Operation check of the complete machine										
Check machine for correct interaction of all functions										
11. Test run										
Check results of test wash and rinse										
Brief instruction for new personnel										

19 Environmentally acceptable measures, Disposal of the installation

Each discarded appliance is to be made immediately unserviceable - to avoid later accidents.

- Therefore, set the local main switch to „OFF“ or switch off the local main fuse.

When you eventually dispose of the installation (dismantlement/scrapping), the parts and their corresponding materials should preferably be re-used.

Here is a list of the materials that most frequently occur when dismantling:

- Chrome-nickel-steel
- Aluminium
- Copper
- Brass
- Electrical and electronic parts
- PP and other synthetic materials

20 Documentation

Installation drawing / technical sheet

Technical data sheet

Wiring diagram / Programming instructions

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Product range overview

Washing machines with stationary wash process
Dishwashing machines, pot and container washing machines, glass washing machines, universal washing machines, salad and vegetable washing machines

Washing machines with transport systems
Dishwashing machines with automatic conveyor transport, dishwashing machines with automatic basket transport

Special washing systems
Fully automatic washing systems for dishware, trays, and cutlery. Flight catering systems for disposing, cleaning, and preparing dishware and equipment for providing onboard meals while in flight; industrial washing machines for specific types of washware; washing machines for trolleys and containers

Conveyor systems
Tray and dishware transport conveyors, dishware sorting and stacking equipment, vertical conveyors

Food waste systems
Machines and systems for handling food waste for environmentally friendly disposal

Industrial kitchen equipment
Equipment and furnishings for central and local kitchens; trolleys, tray and dish stackers, tables, cabinets, and shelves made of high-grade steel, diverse organisational items

Cleaning and disinfection equipment for hospitals and homes
Cleaning and disinfection machines for bedpans and other medical washware in the form of floor-mounted, wall-mounted, and built-in equipment; sluice units, installation units for sanitary areas in hospital rooms, complete furnishings for unclean workrooms.

MEIKOLON cleaning and hygiene products
for glass, dishwashing machines and universal dishwashers as well as for cleaning and disinfection machines.

Complies with the hygiene requirements of DIN 10511-H for commercial class washing, DIN 10510 for commercial dishwashing and DIN 10522 for commercial washing of reusable crates and containers.

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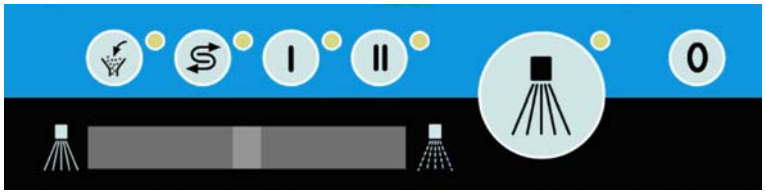
Short Operating instruction EcoStar 545 D-M



Operating panel

1. Preparation for washing and rinsing

- Open the hood.
- Place the screen on suction and stand pipe in position.
- Close the hood.
- Switch on the appliance by pressing one of the program pre-selection keys.
- Check level and if necessary refill detergent and rinse aid reservoirs.
- The machine is ready for operation when flash light of pre-selector button stops

2. Operation during washing and rinsing cycle

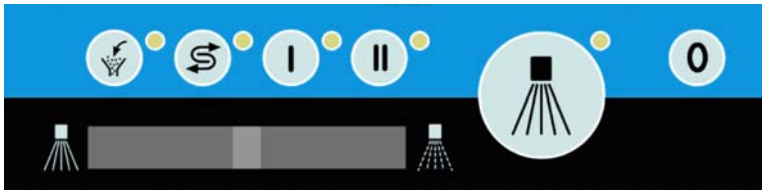
- Place the items in the basket.
- Place the basket in the appliance.
- Close the hood.
- Program I for normal soiled dishes.
- Program II for normal soiled dishes.
- Program III (press I+II) for heavily soiled dishes.
- Press the program start key or press down the hood rod.
- The appliance washes and rinses automatically and switches off the wash program after completion. When the light goes out, open the hood and remove the basket.

3. Shutting down the appliance

- Press the “0“ button (Off button). The machine is switched off when all the lights are out

- Open the hood and remove the stand-pipe
- If the appliance has a built-in waste water pump, the program start button must be pressed to empty the tank.
- The tank interior is sprayed with clean hot water after the tank water has been drained. The hood must remain closed. The waste water pump switches off automatically.
- Clean tank, strainers and wash arms

Short Operating instruction EcoStar 545 D-M



Operating panel

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- Close the hood.
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- Open the hood and remove the stand-pipe
- If the appliance has a built-in waste water pump, the program start button must be pressed to empty the tank.
- The tank interior is sprayed with clean hot water after the tank water has been drained. The hood must remain closed. The waste water pump switches off automatically.
- Clean tank, strainers and wash arms

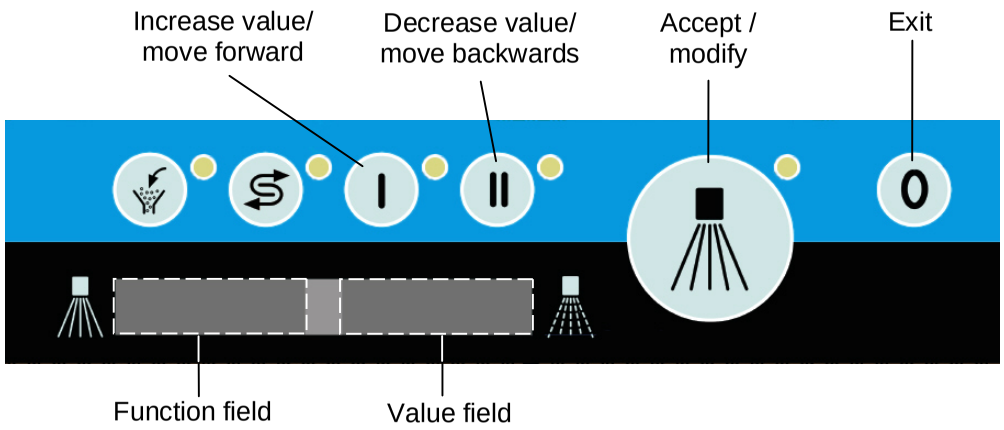
4. Regeneration

- A red lamp indicates that the capacity of the water softener is nearly exhausted
- Carry out the regeneration process according to the operating instructions

Quick programming instructions
EcoStar 530 F-M / EcoStar 545 D-M

1_EcoStar530F-M_T_545D-M_T_Kurzprogrammieranleitung_EN.doc

Using the keyboard for programming



General:

For control programming, the power supply must be available but the machine must be completely switched off (no LED must be illuminated).

Code entry:

View service data: **CODE 10000** Modify service data: **CODE 10001**

To get into the code entry mode, you should keep the “0” key pressed (for around 3 seconds) until you see **Code 1----** on the display unit. By pressing the “0” key once again, you can leave the programming area at any time.

The digit to be modified will flash. Using the key "I" will increase the display unit values, which will be accepted by using the "accept" key. You should select each of the digits in this way one after the other, until the code has been completely entered.

If your entry is incorrect, you will leave the code entry procedure, and the information code 122 will be displayed. If you enter all the digits correctly, you will arrive at the service level.

You can move forwards using the “I” key, and backwards using the “II” key.

The following main positions are available on the service level:

1-1 ----- View/modify parameters

1-2 ----- Ventilate rinse aid inlet
1-3 ----- Ventilate detergent inlet
1-5 ----- Resetting the partial desalination display
1-6 ----- First-time-filling of boiler after emptying the boiler

View parameters:

1-1 ----- Accept the position using the “accept” key, or use the “I” or “II” keys to select the parameters. On the left, the parameter Pxxx will be displayed, and on the right, the value belonging to it.

You can use the “0” key to go back one level.

Modify parameters:

1-1 ---- Choice of parameters as when viewing, but access is via code for “modify service data”. To modify one of the parameters, select it by using the “accept” hey – the value will flash.

Select the value by using the “I” key or the “II” key, and save using the “accept” key. You can leave the current level and go back to the previous level by using the “0” key.

Ventilate rinse aid inlet **1-2 -----**
Ventilate detergent inlet **1-3** ----- (is not existing with depression dosing ADT)

Select the position you require. The selected dosing pump will be energized and the remaining running time will be displayed.

Exit the ventilation programme by using the “exit” key.

Information/ error display:

If you receive an information message, you must follow the instructions. The rinse operation will still be possible.

If you receive an error message, no further rinse operation is usually possible. Notify customer service.

Parameter mode

Attention: the modification of factory set parameters may cause the restricted overall operation of the machine. In case of arbitrary modification of parameters by unauthorized personnel, guarantee claims will become invalid.

Par. No.	Service parameters/ setting options	Use as	value range	Unit	Factory setting	Note
101	Rinse programme / key 1	Parameter	1 ..50	-	2*	Assign rinse programme no. to key 1; verification adjustable
102	Rinse programme / key 2	Parameter	1 ..50	-	3*	Assign rinse programme no. to key 2; verification adjustable
103	Rinse programme / key 3	Parameters	1 ..50	-	7*	Assign rinse programme no. to key 1+2 pressing at the same time; verification adjustable
104	Rinse aid dosing quantity	Parameter	0.10 ..1.00	ml/Liter water	0.2	Value must be set approximately according to manufacturer's information, then it must be corrected depending on the water hardness and the rinse result.
105	Detergent dosing quantity	Parameter	0.1... 20.0	ml/Liter water	2.0	Value must be set approximately according to manufacturer's information, then it must be corrected depending on the water hardness and the rinse result.
106	Hardness degree	Parameter	0 ..50	[°dH]	30	The quantity of soft water available between two regenerations depends on the hardness of the water.
107	Switch beep on / off	Parameter	0/1	-	1	Switch on/off acoustic "beep" ready message
109	Partial / full desalination available?	Parameter	0, 1, 2	-		Partial / full desalination available? 0: NO 1: partial demineralisation (TE) 2: full desalination (VE)
110	Hardness litres per cartridge type	Parameter	0 ..250	1000 L		When the cartridge's capacity is reached (hardness litres/degree of hardness), "Replace Cartridge" will be displayed (INFO 725) (only in the case of TE)
111	Total Operation time Indication	Indication	5 figures	h	0	Operating time, query only
112	Total number of wash cyclesTotal number of wash cycles	Indication	5 figures	-	0	wash cycles / loads, query only
113	Total number of wash cycles since last reset	Indication	5 figures	-	0	wash cycles / loads, resetting possible
114	Serial number	Indication	8 figures	-	Serial number	Possibility of querying factory settings Attention: the first 5 digits will be displayed in rotation with the last 3 digits!

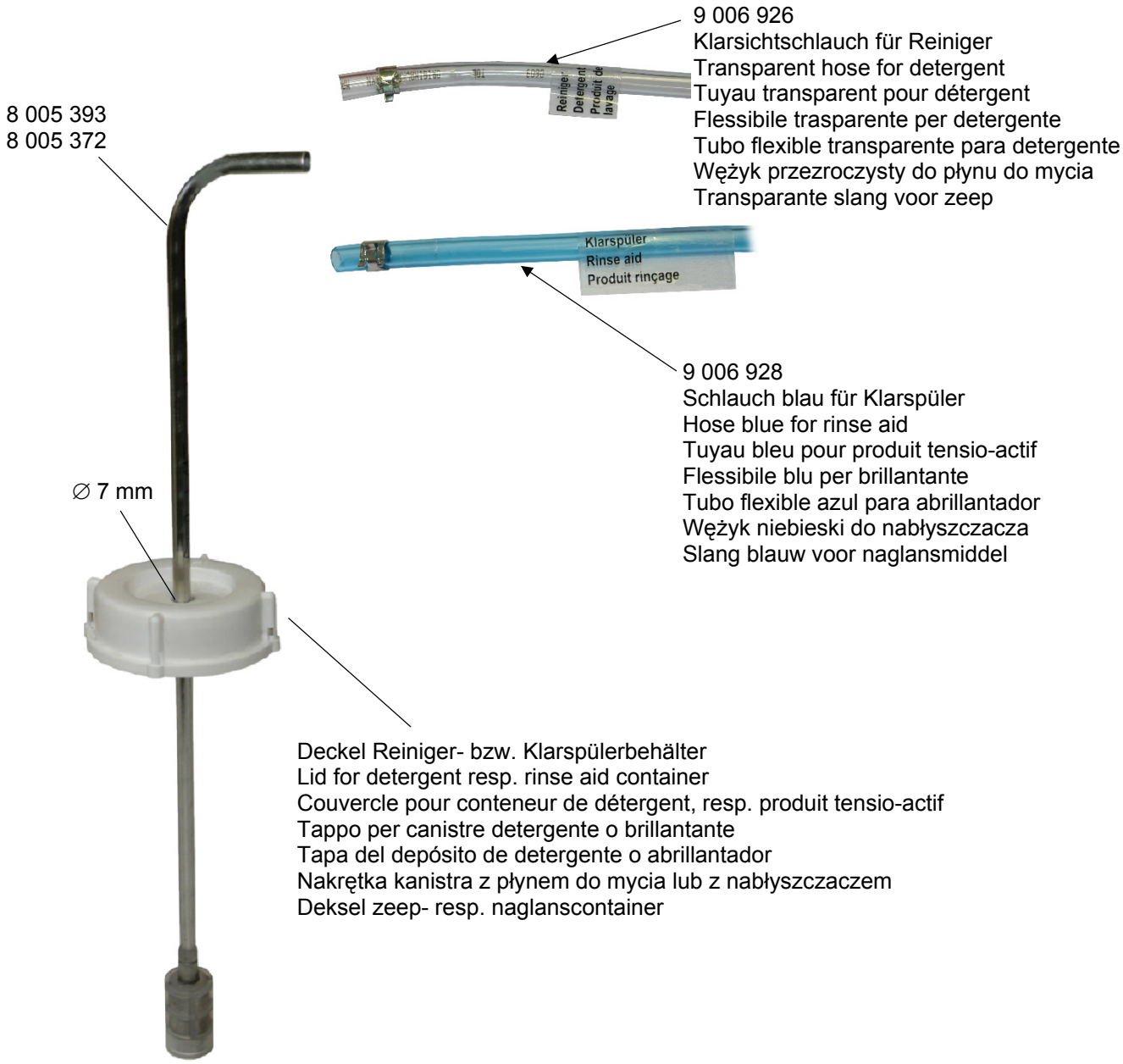
Par. No.	Service parameters/ setting options	Use as	value range	Unit	Factory setting	Note
115	Condition Remaining cartridge capacity	Indication	0 ..100	%		Only for partial / full desalination: TE : indicati on in %, VE: 1 00 = O K; 0 = replace
119	Beep ON/OFF	Parameters	0/1	-	1	It is possible to shut off communication via IR interfaces. (0)
120	Load factory setting service parameters	Parameter	0/1	-	0	Effective only upon power supply reset ON/OFF Attention! All changes to service parameters will be reversed. Power supply reset must be carried out within 5 minutes, otherwise factory settings will not be loaded. Without power supply reset, the information 123 will be displayed.

Rinse programme no.:	Boiler temperature target value	Wash time target value	
		Washing	Total
2	83	74	90
3	83	104	120
7	83	224	240

(*) Depending on the installed heating power and the infeed temperature, there can be a difference between the factory settings of the rinsing programs and the values listed above.

Details of further pre-defined rinse programmes are given in the Service Instructions, chapter 15.6.

Saugleitung für Reiniger bzw. Klarspüler
Suction line for detergent resp. rinse aid
Conduite d'aspiration pour détergent, resp. produit tensio-actif
Tubo d´aspirazione per detergente e brillantante
Tubo de aspiración para detergente y abrillantador
Układ ssący płynu do mycia lub nabłyszczacza
Aanzuigleiding voor zeep- resp. naglansmiddel


9 006 926
Klarsichtschlauch für Reiniger
Transparent hose for detergent
Tuyau transparent pour détergent
Flessibile trasparente per detergente
Tubo flexible transparente para detergente
Wężyk przezroczysty do płynu do mycia
Transparante slang voor zeep
8 005 393
8 005 372
Klarspüler
Rinse aid
Produit rinçage
9 006 928
Schlauch blau für Klarspüler
Hose blue for rinse aid
Tuyau bleu pour produit tensio-actif
Flessibile blu per brillantante
Tubo flexible azul para abrillantador
Wężyk niebieski do nabłyszczacza
Slang blauw voor naglansmiddel
∅ 7 mm
Deckel Reiniger- bzw. Klarspülerbehälter
Lid for detergent resp. rinse aid container
Couvercle pour conteneur de détergent, resp. produit tensio-actif
Tappo per canistre detergente o brillantante
Tapa del depósito de detergente o abrillantador
Nakrętka kanistra z płynem do mycia lub z nabłyszczaczem
Deksel zeep- resp. naglanscontainer

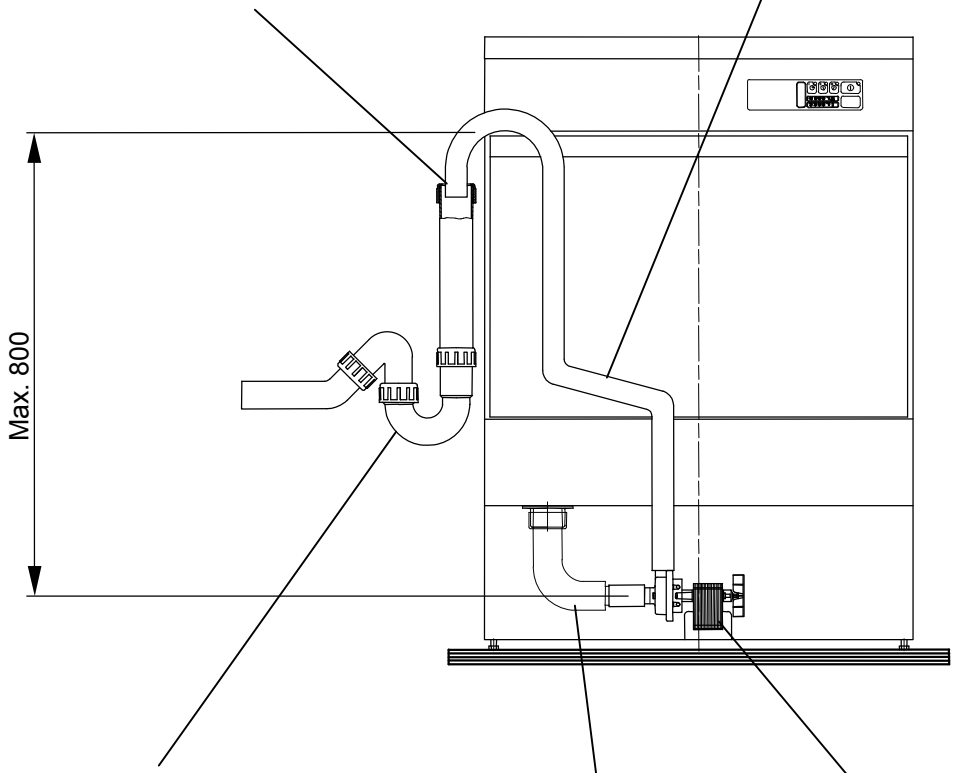
ACHTUNG!	**Saugleitung von Wärmequellen fernhalten!**
ATTENTION!	**Keep away suction line from heating sources!**
ATTENTION!	**Ecartez la conduite d'aspiration de toute source de chaleur!**
ATTENZIONE!	**Tenere il tubo d´aspirazione lontano da fonti di calore!**
¡ATENCION!	**¡Mantenga el tubo de aspiración alejado de las fuentes de calor!**
UWAGA!	**Układ ssący należy trzymać z dala od źródeł ciepła!**
LET OP!	**Aanzuigleiding van warmtebronnen verwijderd houden!**

Anschlussvorschrift für Laugenpumpe
Connection prescription for drain pump
Prescription de connexion pour pompe de vidange
Prescrizioni di collegamento per la pompa scarico
Prescripciones para la conexión de la bomba de vaciado
Reguła instalacji pompy spustowej
Aansluitschema voor machine met afvoerpomp

MEIKO
8.97/LP 7
sprachig.DOC

Freier Auslauf
Air gap
Système anti-refoulement avec disconnecteur atmosphèrique
Air gap
Sistema air gap
System wolny wlot (air gap)
Vrij uitloop

Druckleitung, durchgehend steigend verlegt
Pressure pipe continuously ascending
Tuyau de pression continuellement ascendant
Tubo di pressione, montato con salita continua
Tubo de presión, continuamente ascendente
Układ ciśnieniowy wznoszący w pionie
Drukleiding, stijgend gemonteerd



Ablaufverrohrung mit Siphon bauseits
Drain pipework with siphon, locally
Tuyauterie de vidange avec siphon sur place
Scarico con sifone a cura del committente
Tubería de desagüe con sifón, a cargo del cliente
Orurowanie kanalizacyjne z syfonem przez klienta
Afvoer met sifon, bouwkundig

Saugleitung
Suction pipe
Tuyau d`aspiration
Tubo d`aspirazione
Tubo de aspiración
Układ ssący
Aanzuigleiding

Laugenpumpe
Drain pump
Pompe de vidange
Pompa di scarico
Bomba de vaciado
Pompa spustowa
Afvoerpomp

CE - Konformitätserklärung

Datum: 2009-12-29 (Update)

CE Declaration of Conformity / Déclaration de conformité CE / Dichiarazione di conformità CE / Declaración de conformidad CE / CE-conformiteitsverklaring

Firma / Company/Société / Ditta / Empresa / Fabrikant:
Adresse / Address / Adresse / Indirizzo / Dirección / Adres:

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Englerstraße 3
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Auftrag Nr.

Order no. / No. de commande / No. d'ordine / No. de pedido / Opdracht nr.:

Spülmaschine Typ Dishwasher model Lave-vaisselle modèle Lavastoviglie modello Lavavajillas modelo Modelo de lavavajillas Vaatwasmachine model	**FV 28 G** **FV 28 GiO** **FV 40.2** **FV 40.2 G** **FV 60.2** **FV 70.2**	**FV 130 B** **FV 250 B** **FV 130.2** **FV 250.2**	**DV 80 T** **DV 80.2** **DV 125.2**	**DV 120.2** **DV 200.2** **DV 200.2 PW** **DV 270 B** **DV 270.2**	**EcoStar 430 F** **EcoStar 530 F-M** **EcoStar 545 D-M**	**OR 50 H** **GK 60**

Konformitätserklärung

Declaration of Conformity / Déclaration de conformité / Dichiarazione di conformità / Declaración de conformidad / Conformitetsverklaring:

Hiermit bescheinigen wir in alleiniger Verantwortung die Konformität des Erzeugnisses mit den grundlegenden Anforderungen d folgenden EG-Richtlinien, harmonisierten Normen, nationalen Normen.

We hereby declare at our sole responsibility that the product conforms to the essential requirements of the following EC Directives, harmonized standards, national standards.

Par la présente nous certifions sous notre seule responsabilité la conformité du produit avec les exigences fondamentales des directives CE, normes harmonisées et normes nationales suivantes.

Con la presente dichiariamo sotto la nostra responsabilità la conformità del prodotto con i regolamenti basilari delle seguenti direttive CE, normative armonizzate e normative nazionali.

Por la presente declaramos bajo nuestra sola responsabilidad que nuestros productos están en conformidad con las exigencias básicas de las siguientes directivas de la CE, normas homologadas y normas nacionales.

Hiermee verklaren wij onder geheel eigen verantwoordelijkheid de conformiteit van het product met de fundamentele en gestelde eisen volgens EG-richtlijnen, geharmoniseerde normen en nationale normen.

EG-Richtlinie / EC Directive / Directive CE / Regolamento CE / Directiva CE / EG-richtlijn

2006/42/EG

Offenburg, 17.12.2009

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Responsible for documentation / Responsable de la documentation / Responsabile della documentazione/ Responsable de la documentación / Voor deze documentatie verantwoordelijk

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MEIKO Maschinenbau GmbH & Co. KG

ppa.
(per procura)

Dr. Thomas Peukert
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